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BACHELOR OF TECHNOLOGY

(Information Technology- Data Analytics)

BY

Ayush Athare (MITU23BTITD003)

Pravin Ranmale (MITU23BTITD009)

Vaishnavi Mojad (MITU22BTIT0096)

Under The Guidance of
Prof. Ashwini jadhav

DEPARTMENT OF INFORMATION TECHNOLOGY
MIT School of Computing
MIT Art, Design and Technology University Rajbaug Campus

College Management System - DevOps Project Report

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1. Project Overview

Project Title: College Management System
Subject: DevOps

Objectives

- **To simplify and digitize routine college operations.**
- **To centralize data management for transparency and accessibility.**
- **To reduce paperwork and human error.**
- **To enable role-based access for secure system usage.**
- **To generate automated reports for performance and decision-making.**

3. Scope of the Project

The system is intended for:

- **Students**: to access personal academic records, attendance, grades, and fee information.
- **Faculty**: to mark attendance, upload marks, and manage classes.
- **Admin staff**: to manage admissions, course allocations, scheduling, and fee tracking.

4. Modules of the System

4.1 Student Module

- Profile creation and update
- View attendance, marks, timetable
- Fee payment and receipt generation
- Exam notifications and results

4.2 Faculty Module

- Manage attendance
- Upload internal/exam marks
- Schedule assignments and exams
- Communication with students/admin

4.3 Admin Module

- Admission management
- Course, subject, and timetable setup
- Fee and payment tracking
- Report generation (attendance, performance)

4.4 Examination Module

- Exam scheduling and seating plans
- Marks entry and grade calculations
- Automated result generation
- Report card generation

4.5 Fee Management Module

- Fee structure setup
- Due and paid fee tracking
- Online payment gateway integration
- Reports and receipts

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5. System Architecture

A 3-tier architecture:

- **Presentation Layer**: Frontend interface for users (HTML, CSS, JavaScript/React)
- **Application Layer**: Handles business logic (Node.js / Django / PHP)
- **Database Layer**: Stores data (MySQL / PostgreSQL / MongoDB)

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6. Technology Stack

Component	Technology Used
Frontend	HTML, CSS, JS / React
Backend	Node.js / Django
Database	MySQL / MongoDB
Version Control	Git, GitHub
Deployment	Docker, Jenkins, Kubernetes (optional)

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7. Flowchart and System Workflow

Include the flowchart image provided earlier in your report here with a caption like “Figure 1: System Flowchart for CMS”.

Describe the workflow:

- User logs in
- Redirected based on role
- Each panel interacts with the database
- Actions such as attendance marking, fee updates, or result uploads trigger CRUD operations

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8. Features

- Responsive Web Design
- Role-based Login System
- Attendance and Marks Management
- Automated Report Generation
- Centralized Database Access
- Secure and Scalable Architecture

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9. Testing and Validation

- **Unit Testing** for each module (e.g., login, fee processing)
- **Integration Testing** to ensure all modules work in sync
- **UI Testing** for responsive design
- **Security Testing** to ensure role-based access and data protection

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10. Benefits and Impact

- Reduces manual workload
- Minimizes errors in data handling
- Provides transparency to all stakeholders
- Faster and data-driven decision-making
- Enhances the student experience

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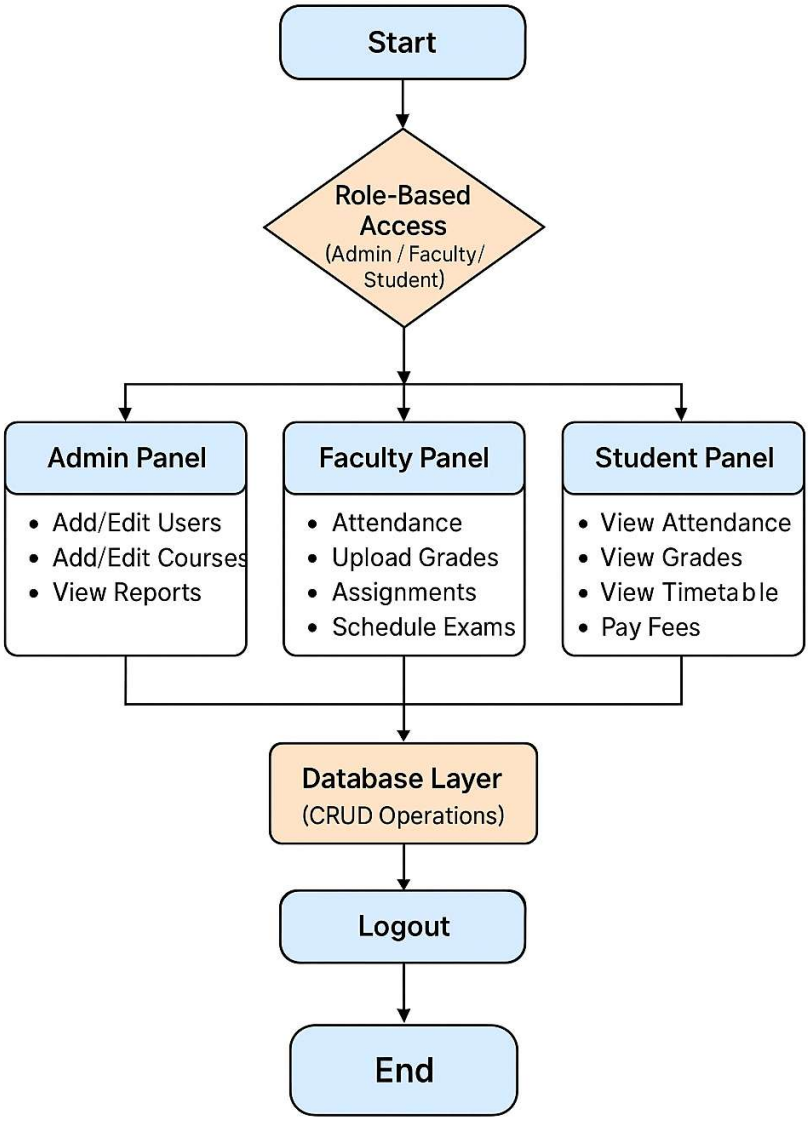
11. Limitations

- Dependent on internet connectivity
- Requires digital literacy for smooth usage
- Might need training for initial adoption
- Scalability depends on backend infrastructure

12. Future Enhancements

- Mobile app version using Flutter
- Integration of AI-based chat assistant for student help
- Real-time notifications via SMS/email
- Cloud deployment (AWS/GCP)
- Blockchain for certificate authenticity



College Management System

13. Conclusion

The College Management System is a powerful and flexible solution for educational institutions. It improves academic operations, enhances transparency, and provides a digital-first experience. With the addition of modern tech like DevOps, cloud, and analytics, it can be transformed into a smart campus system.